

What is claimed is:

1. A computer system for searching a database, comprising:

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an input section responsive to user entry of a user query;

an expansion section responsive to the input section, for  
expanding the user query to include synonyms of action words and  
10 object words in the user query;

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a validation section responsive to said expansion section, and  
arranged for interaction with a subject-action-object knowledge  
database (SAO KB) containing fields with subjects, actions, objects,  
15 for selecting only those queries having corresponding expressions in  
the SAO KB; and

an output section for transmitting the selected queries for  
searching in the database.

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2. A computer system as in claim 1, wherein said entry section  
includes an analysis portion for separating actions from objects.

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3. A computer system as in claim 1, wherein said expansion  
section interacts with an action dictionary of synonyms.

4. A computer system as in claim 1, wherein said validating  
section includes an output portion for outputting validated results and  
rejecting non-validated results

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5. A computer system as in claim 1, wherein said expansion section interacts with an action dictionary of synonyms, said action dictionary of synonyms having:
- 5           a list of verbs with similar sense;
- 10           a list of “verb-noun” expressions synonymous with other verbs;
- 10           a list of “verbsA” including the verbs –perform, carry out, realize, and other verbs with similar sense;
- 15           a list of “verb - relevant verbal nouns”;
- 15           a list of “verbsB” including the verbs –produce, create, form, and other verbs with similar sense;
- 20           a list of “participle2” words including “verb - relevant participles”.
- 20           6. A computer system as in claim 5, wherein said expansion section includes an action expansion portion responsive to said action dictionary of synonyms and to an action word for forming:
- 25           a list of verbs relevant to an action;
- 25           a list of “verbsA - verbal noun” expressions relevant to an action;
- 25           a list of “verbsB - participle2” expressions relevant to an action;

a list of “verb - noun” expressions relevant to an action.

7. A computer system as in claim 1, wherein said expansion section interacts with a dictionary of object synonyms.

8. A computer system as in claim 1, wherein said expansion section interacts with a dictionary of object synonyms, said action dictionary of object synonyms containing groups of objects having similar sense and an object expression portion to form lists of expressions synonymous from an object and the dictionary of objects synonyms.

9. A computer system as in claim 1, wherein said validation section includes the fields: subjects, actions, objects, and “main parts of objects” and classifies the query on the basis of the fields in response to the expansion section and in response to the SAO KB.

10. A computer system as in claim 6, wherein said wherein  
20 said expansion section interacts with a dictionary of object synonyms,  
said action dictionary of object synonyms containing groups of objects  
having similar sense and an object expression portion to form lists of  
expressions synonymous from an object and the dictionary of objects  
synonyms, and said validation section includes the fields: subjects,  
25 actions, objects, and “main parts of objects” and classifies the query on  
the basis of the fields in response to the expansion section and in  
response to the SAO KB.

11. A method for composing a computer search, comprising:

expanding a user query with action synonyms and with object synonyms to obtain expanded queries;

- 5        obtaining results and validating the results obtained from the expanded queries by comparing the expanded queries with a subject-action-object knowledge database (SAO KB) containing fields with subjects, actions, objects, so as to validate only expanded queries having corresponding expressions in the SAO KB;

10                    outputting validated results to obtain search results.

12. A method as in claim 11, wherein said processing an entry includes separating actions from objects.

15                    13. A method as in claim 11, wherein said expanding step includes interaction with an action dictionary of action synonyms.

20                    14. A method as in claim 16, wherein said validating step includes outputting validated results and rejecting non-validated results.

25                    15. A method as in claim 11, wherein said expanding step includes interaction with an action dictionary of synonyms, said action dictionary of synonyms having:

a list of verbs with similar sense;

a list of “verb-noun” expressions synonymous with other verbs;

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- a list of “verbsA” including the verbs –perform, carry out, realize, and other verbs with similar sense;
- 5           a list of “verb - relevant verbal nouns”;
- a list of “verbsB” including the verbs –produce, create, form, and other verbs with similar sense;
- 10          a list of “participle2” words including “verb - relevant participles”.
16. A method as in claim 15, wherein said expanding step includes an action expansion responsive to said action dictionary of synonyms and to an action word for forming:
- a list of verbs relevant to an action;
- a list of “verbsA - verbal noun” expressions relevant to an action;
- 20          a list of “verbsB - participle2” expressions relevant to an action;
- a list of “verb - noun” expressions relevant to an action.
- 25          17. A method as in claim 11, wherein said expanding step includes interacting with a dictionary of object synonyms.
18. A method as in claim 11, wherein said expanding step includes interacting with a dictionary of object synonyms, said action

dictionary of object synonyms containing groups of objects having similar sense, and an said expanding step includes forming object expression synonyms from an object and the dictionary of objects synonyms.

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19. A method as in claim 11, wherein said validation step includes generating the fields: subjects, actions, objects, and “main parts of objects” and classifying the query on the basis of the fields in response to the expanding step and in response to the SAO KB.

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20. A method as in claim 16, wherein said expanding step includes interacting with a dictionary of object synonyms, said dictionary of object synonyms containing groups of objects having similar sense and an object expression portion to form lists of expressions synonymous from an object and the dictionary of objects synonyms, and said validation step includes generating the fields: subjects, actions, objects, and “main parts of objects” and classifying the query on the basis of the fields in response to the expanding step and in response to the SAO KB.

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21. A system as in claim 1, wherein said SAO KB contains data prepared from texts in a discipline corresponding to the discipline of the query.

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22. A method as in claim 1, wherein said SAO contains data prepared from texts in a discipline corresponding to the discipline of the query.

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23. A system as in claim 1, wherein said SAO KB contains only data prepared from texts in a discipline corresponding to the discipline of the query.
- 5        24. A method as in claim 1, wherein said SAO contains only data prepared from texts in a discipline corresponding to the discipline of the query.